

## CLAIMS

1           1.     A physical storage system for a computer network wherein at least  
2 two users may simultaneously access a common file, said system comprising:

3                 at least two local computers, each said local computer further including a  
4 memory, said memory including at least one local partition that stores updates to  
5 said file, and transmission means for transmitting said updates;

6                 at least one remote computer coupled to each of said at least two local  
7 computers, said remote computer further including:

8                         receiving means for receiving said updates from each of said  
9 at least two local computers;

10                        a memory, said memory including at least one remote  
11 partition that stores said updates from said at least two local  
12 computers; and

13                        merging means for merging said updates from said at least  
14 two local computers into said remote partition.

1           2.     The physical storage system of Claim 1 wherein said local partitions  
2 include journal partitions and said remote partition includes a library partition for  
3 storing a current version of said file.

1           3.     The physical storage system of Claim 2 wherein said memory of said  
2     at least one remote computer further includes an archive partition coupled to  
3     receive data from said library partition, said archive partition storing older  
4     versions of said file.

1           4.     The physical storage system of Claim 1 wherein said transmission  
2     means further includes means for transmitting said updates at clock intervals.

1           5.     The physical storage system of Claim 1 wherein said transmission  
2     means further includes means for transmitting said updates upon the occurrence of  
3     specified events.

1           6.     The physical storage system of Claim 5 wherein said specified events  
2     include said local partition reaching a certain size.

1           7.     The physical storage system of Claim 5 wherein said specified events  
2 include a certain number of transactions having transpired since a previous  
3 transmission.

1           8.     The physical storage system of Claim 1 wherein said updates are  
2 stored in said local partitions in the form of data objects, said data objects  
3 corresponding to a data item and indicating the version of said data item.

1           9.     The physical storage system of Claim 1 wherein said merging means  
2 further includes conflict resolving means for resolving conflicts between a first  
3 update from one of said at least two local computers and a second update from a  
4 different one of said at least two local computers.

1           10.    The physical storage system of Claim 9 wherein said conflict  
2 resolving means further includes combining means for combining said first update  
3 with said second update, said combining means operable when said first and  
4 second updates are not inconsistent with one another.

1           11. The physical storage system of Claim 10 wherein said conflict  
2 resolving means further includes selecting means for selecting said first update  
3 over said second update for writing to said remote partition according to specified  
4 criteria.

1           12. The physical storage system of Claim 10 wherein said selecting  
2 means selects said first update based upon a timestamp.

1           13. The physical storage system of Claim 10 wherein said selecting  
2 means selects said first update based upon a status level associated with said first  
3 update.

1           14. The physical storage system of Claim 3 wherein said merging means  
2 further includes archiving means for transferring an older version of a data item  
3 from said library partition to said archive partition when a newer version of said  
4 data item is merged into said library partition from said journal partition.

1           15.    The physical storage system of Claim 1 wherein said local computers  
2 include personal computers and said remote computer includes a server.

1           16.    The physical storage system of Claim 1 wherein said file includes a  
2 database.

1           17.    The physical storage system of Claim 2 wherein said journal file  
2 includes variable length data objects.

1           18.    The physical storage system of Claim 17 further including writing  
2 means for writing data objects to said journal file without overwriting other data  
3 objects.

1           19.    The physical storage system of Claim 18 wherein said data objects  
2 include object identification numbers and said system further includes a table for  
3 storing a mapping that relates said data objects to physical storage locations.

1           20. A method for providing simultaneous access to a common file on a  
2 computer network, said network including at least two local computers and at least  
3 one remote computer coupled to each of said at least two local computers, said  
4 method including the steps of:

5           providing an element for partitioning memories on said local computers into  
6 local partitions that store updates to said file;

7           providing an element for transmitting said updates;

8           providing an element for receiving said updates on said remote computer  
9 from each of said at least two local computers;

10          providing an element for partitioning a memory on said remote computer  
11 into a remote partition that stores said updates from said at least two local  
12 computers; and

13          providing an element for merging said updates from said at least two local  
14 computers into said remote partition.

1           21. The method of Claim 20 wherein said local partitions include journal  
2 partitions and said remote partition includes a library partition for storing a current  
3 version of said file.

1           22. The method of Claim 21 further including the steps of:  
2           providing an element for partitioning said remote memory into an archive  
3           partition; and  
4           providing an element for transferring data from said library partition to said  
5           archive partition.

1           23. The method of Claim 20 wherein said step of providing an element  
2           for transmitting said updates further includes the step of providing an element for  
3           transmitting said updates at clock intervals.

1           24. The method of Claim 20 wherein said step of providing an element  
2           for transmitting said updates further includes the step of providing an element for  
3           transmitting said updates upon the occurrence of specified events.

1           25. The method of Claim 24 wherein said specified events include said  
2           local partition reaching a certain size.

1           26.    The method of Claim 24 wherein said specified events include a  
2   certain number of transactions having transpired since a previous transmission.

1           27.    The method of Claim 20 further including the step of providing an  
2   element for storing said updates in said local partitions in the form of data objects,  
3   said data objects corresponding to a data item and indicating the version of said  
4   data item.

1           28.    The method of Claim 20 wherein said step of providing an element  
2   for merging further includes the step of providing an element for resolving  
3   conflicts between a first update from one of said at least two local computers and  
4   a second update from a different one of said at least two local computers.

1           29.    The method of Claim 28 wherein said step of providing an element  
2   for resolving conflicts further includes the step of providing an element for  
3   combining said first update with said second update when said first and second  
4   updates are consistent with one another.



1           30. The method of Claim 29 wherein said step of providing an element  
2 for resolving conflicts further includes the step of providing an element for  
3 selecting said first update over said second update for writing to said remote  
4 partition according to specified criteria.

1           31. The method of Claim 29 wherein said step of providing an element  
2 for selecting said first update further includes the step of providing an element for  
3 selecting said first update based upon a timestamp.

1           32. The method of Claim 29 wherein said step of providing an element  
2 for selecting said first update further includes the step of providing an element for  
3 selecting said first update based upon a status level associated with said first  
4 update.

1           33. The method of Claim 21 wherein said journal file includes variable  
2 length data objects.

1           34. The method of Claim 33 further including the step of providing an  
2 element for writing data objects to said journal file without overwriting other data objects.

1           35. The method of Claim 34 wherein said data objects include object  
2 identification numbers and said method further includes the step of providing an  
3 element for storing a table that relates said data objects to physical storage  
4 locations.

1           36. The method of Claim 29 wherein said step of providing an element  
2 for merging further includes the step of providing an element for transferring an  
3 older version of a data item from said library partition to said archive partition  
4 when a newer version of said data item is merged into said library partition from  
5 said journal partition.

1           37. The method of Claim 20 wherein said local computers include  
2 personal computers and said remote computer includes a server.

1           38. The method of Claim 20 wherein said file includes a database.

1           39. A physical storage system for a computer network, comprising:  
2           a first memory including a first partition, said first partition configured to  
3           store updates to a data item, said updates being stored in an update data object;  
4           a second memory including a second partition, said second partition  
5           configured to store a previous version of said data item, said previous version of  
6           said data item being stored in a previous version data object;  
7           combining means for combining said updates to said data item in said  
8           update data object with said previous version of said data item in said previous  
9           version data object to form an updated version of said data item; and  
10          storing means for storing said updated data.

1           40. The system of claim 39 wherein said first partition comprises a  
2           journal partition and said second partition comprises a library partition.

1           41. The system of claim 39 wherein said first memory and said second  
2           memory reside on the same physical device.

1           42. The system of claim 39 wherein said first memory resides in a local  
2           computer and said second memory resides on a remote computer.

1           43. The system of claim 39 wherein said data item comprises a text data  
2 item and said updates comprise a series of editing actions.

1           44. The system of claim 39 wherein said data item comprises a list data  
2 item and said updates comprise additions or removals to said list.

1           45. The system of claim 39 wherein said second partition is configured  
2 to store said updated data.

1           46. The system of claim 39 wherein said second partition resides on a  
2 read-only device.

1           47. The system of claim 46 wherein said read-only device comprises a  
2 CD-ROM.

1           48. The system of claim 39 wherein said update data object includes a  
2 flag indicating that said data item comprises an appendable data item.

1           49. The system of claim 48 further comprising reading means for  
2 reading said update data object and said previous version data object.

1           50. A method for storing data items comprising the steps of:  
2           providing an element for configuring a first partition in a first memory to  
3           store updates to a data item;  
4           providing an element for storing said updates in an update data object;  
5           providing an element for configuring a second partition in a second memory  
6           to store a previous version of said data item;  
7           providing an element for storing said previous version of said data item in a  
8           previous version data object;  
9           providing an element for combining said updates to said data item in said  
10          update data object with said previous version of said data item in said previous  
11          version data object to form an updated version of said data item; and  
12          providing an element for storing said updated data.

1           51. The method of claim 50 wherein said first partition comprises a  
2           journal partition and said second partition comprises a library partition.

1           52. The method of claim 50 wherein said first memory and said second  
2           memory reside on the same physical device.

1           53. The method of claim 50 wherein said first memory resides in a local  
2           computer and said second memory resides on a remote computer.

1           54.    The method of claim 50 wherein said data item comprises a text data  
2 item and said updates comprise a series of editing actions.

1           55.    The method of claim 50 wherein said data item comprises a list data  
2 item and said updates comprise additions or removals to said list.

1           56.    The method of claim 50 further including the step of providing an  
2 element for configuring said second partition to store said updated data.

1           57.    The method of claim 50 wherein said second partition resides on a  
2 read-only device.

1           58.    The method of claim 57 wherein said read-only device comprises a  
2 CD-ROM.

1           59.    The method of claim 58 wherein said update data object includes a  
2 flag indicating that said data item comprises an appendable data item.

1           60.    The method of claim 59 further comprising the step of providing an  
2 element for reading said update data object and said previous version data object.